

IN THE CLAIMS

Claim 1 (amended) A real time distribution system for a multi-element network comprising:  
a master network element having timing means to derive a real time stamp;  
distribution means to distribute the real time stamp to the remaining network elements, the real time stamp being divided into a low precision portion and a high precision portion, each portion being distributed by a different messaging scheme;  
means in the network elements to maintain a record of the most recently distributed real time stamp; and  
means in the network elements to derive a local time stamp from the recorded time stamp in the event of a failure of the distributed time stamp.

Claim 2 (original) A real time stamp distribution system as defined in claim 1 wherein the local time stamp is disregarded upon receipt of a real time stamp distributed by the master network element.

Claim 3 (original) A real time stamp distribution system as defined in claim 1 wherein the network elements derive an estimate of the next real time stamp to be delivered by the master network element.

Claim 4 (original) A real time stamp distribution system as defined in claim 3 wherein an error detector compares the estimated next real time stamp with the distributed real time stamp and provides an error indication if the two values are not in agreement.

Claim 5 (original) A real time stamp distribution system as defined in claim 4 wherein the network elements correct the real time stamp by deriving a time stamp from the local time stamp upon receipt of an error indication.

Claim 6 (original) A real time stamp distribution system as defined in claim 5 wherein a record is kept of the number of occasions that the real time stamp is derived by the network elements from the local time stamp.

Claim 7 (original) A real time stamp distribution system as defined in claim 6 wherein the network element has means to switch over to local time stamp derivation if the number of occasions that an error is detected exceeds a preset number.

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Claim 8 (original) A real time stamp distribution system as defined in claim 7 wherein a network element switches over to the local time stamp when a certain number of consecutive errors have been detected.

Claim 9 (amended) A real time distribution system for a multi-element network comprising:

a master network element having timing means to derive a real time stamp;

distribution means to distribute the real time stamp to the remaining network elements, the real time stamp being divided into a low precision portion and a high precision portion, each portion being distributed by a different messaging scheme; and

means in the network elements to maintain a record of its real time stamp; and

synchronization means to indicate when the recorded real time stamp is synchronized with the real time stamp distributed by the master network element.

Claim 10 (original) A real time stamp distribution system as defined in claim 9 wherein the timing means derives a real time stamp from an outside source.

Claim 11 (original) A real time stamp distribution system as defined in claim 9 wherein the synchronization means implements a synchronization feature in the network element upon a re-start operation.

Claim 12 (original) A system as defined in claim 1 wherein at least one element has a underrun error detector to compare the record of the high precision portion of the RTS with the low precision portion distributed by the master element and to provide an underrun error signal if the low precision portion is updated before the recorded value indicates such an update is correct.

Claim 13 (original) A system as defined in claim 1 wherein at least one network element has a overrun error detector to compare the record of the high precision portion of the RTS with the low precision portion distributed by the master element and to provide an overrun error signal if the low precision portion is not updated before the recorded value indicates such an update is correct.

Claim 14 (original) A system as defined in claim 12 having error correction means to correct for underrun errors.

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Claim 15 (original) A system as defined in claim 13 having error correction means to correct for overrun errors.

Claim 16 (original) A system as defined in claim 1 wherein said real time stamp has a high precision portion, a low precision portion, and an intermediate portion, the intermediate portion being encoded with a deterministic pattern which is known by the network elements.

Claim 17 (original) A system as defined in claim 16 wherein each network element has means to predict the next intermediate portion of the RTS whereby an error detection and correction scheme is implemented.

Claim 18 (original) A system as defined in claim 17 wherein said error correction scheme corrects data errors.

Claim 19 (original) A system as defined in claim 16 wherein software in said network elements detects a software message error when a last value of the deterministic pattern of the intermediate portion of the RTS is received before a low precision portion update has been received.

Claim 20 (original) A system as defined in claim 19 wherein the software in the network elements can correct the software message error.

Claim 21 (amended) A method of distributing a real time stamp for a multi-element network comprising:  
providing a master network element having timing means to derive a real time stamp;  
providing distribution means to distribute the real time stamp to the remaining network elements,  
the real time stamp being divided into a low precision portion and a high precision portion, each portion  
being distributed by a different messaging scheme;  
providing means in the network elements to maintain a record of the most recently distributed real time stamp; and  
providing means in the network elements to derive a local time stamp from the recorded time stamp from the recorded time stamp in the event of a failure of the distributed time stamp.

Claim 22 (amended) A method of distributing a real time stamp for a multi-element network comprising:  
providing a master network element having timing means to derive a real time stamp;

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providing distribution means to distribute the real time stamp to the remaining network elements,  
the real time stamp being divided into a low precision portion and a high precision portion, each portion  
being distributed by a different messaging scheme;

providing means in the network elements to maintain a record of its real time stamp; and  
providing a synchronization means to indicate when the recorded real time stamp is synchronized  
with the real time stamp distributed by the master network element.